ESTIMATED ECONOMIC AND FISCAL IMPACT OF THE CIRA CENTRE

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1.0 EXECUTIVE SUMMARY

This report presents estimates of the net economic and fiscal impacts on the City of Philadelphia and the Commonwealth of Pennsylvania of Brandywine Realty Trust's Cira Centre development at 30th Street Station. The Cira Centre project benefits from its inclusion in the Commonwealth of Pennsylvania's Keystone Opportunity Improvement Zone (KOIZ). The Cira Centre is a 29-floor, 732,000 square foot landmark building that has dramatically enhanced the City's skyline. It also represents the first major office tower on the western side of the Schuylkill River, adjacent to Amtrak's 30th Street Station and SEPTA's transit and regional rail hub. An excellent example of transit-oriented development, the Cira Centre serves as a cornerstone in the City's planned westward expansion of its central business district.

The project was the first commercial office development in the City of Philadelphia to participate in the Commonwealth of Pennsylvania's Keystone Opportunity Improvement Zone (KOIZ). Firms located within the Cira Centre qualify for a number of state and local tax incentives through the end of 2018. Our research goal was to determine whether the public incentives extended to this development and to its tenants have generated or will generate a net gain for the City, based on data associated with the initial leasing and opening of the building.

Based on our economic analysis, we address three important public policy questions:

1. Did the foregone city and state taxes "work" to generate additional quantifiable economic activity?
    - Economic benefits produced by the project's upfront construction phase
    - Economic benefits produced by the building's ongoing operations
    - Real estate impacts from the influx of office supply and the effect on office demand as a result of the project
2. Will the fiscal revenues generated by this additional economic activity be greater than the foregone tax revenues, and if so, how much greater?
    - Fiscal impacts of the initial tax exemptions and the ongoing expansion of City and State tax revenue bases
    - Net present value of net fiscal benefits over time
3. Has the project generated any qualitative or intangible benefits for the City and State?

As to the first question, our analysis shows that the Cira Centre has already had a very strong net economic impact on the City and State. The figures below represent the incremental difference between

the anticipated economic impacts of the Cira Centre and the economic activity that would have otherwise occurred (i.e. net of displacement) (see Table 1.1).[1]

Table 1.1 – Economic Impacts of the Cira Centre on Philadelphia/Pennsylvania

	Construction (one-time and completed)		Operating (net induced) (potential and annual)	
	Philadelphia County	Pennsylvania State	Philadelphia County	Pennsylvania State
Direct Expenditures ($MM)	$ 231.9	$ 231.9	$ 59.3	$ 49.6
Indirect & Induced Expenditures ($MM)	$ 110.6	$ 329.2	$ 34.3	$ 61.5
Total Output ($MM)	$ 342.5	$ 561.2	$ 93.6	$ 111.1
Multiplier	1.5	2.4	1.6	2.2
Total Employment	1,472.6	4,908.2	1,666.3	1,922.6
Total Earnings ($MM)	$ 55.8	$ 181.5	$ 81.9	$ 89.5
Average Wage	$ 37,864	$ 36,984	$ 49,157	$ 46,551

Source: Econsult Corporation

The construction phase has been completed and has produced significant gains in spending, earnings, and employment: over $340 million in output, supporting almost 1500 jobs and over $55 million in earnings for Philadelphia, and over $560 million in output, supporting almost 5000 jobs and over $180 million in earnings for Pennsylvania. Meanwhile the building's ongoing operations hold similar promise for the local economy and real estate market: annually over $90 million in new output, supporting over 1600 new jobs and over $80 million in new earnings for Philadelphia, and over $110 million in new output, supporting over 1900 new jobs and almost $90 million in new earnings for Pennsylvania. Importantly, these positive economic impacts have been and will be enjoyed by a wide variety of industries across the City and State.

In addition, constructing this building has had a significant positive effect on the local real estate market. Contrary to the fears of those who opposed the project on the grounds that the additional supply of office space would throw that market off-balance, the local market has responded favorably to the arrival of the Cira Centre.

[1] As will be explained in future sections, the construction figures are the sum of direct, one-time expenditures during the construction phase, as well as the indirect and induced expenditures that those direct expenditures support. The operating figures are the sum of ongoing expenses related to maintaining the building itself and the economic activity of its tenants.

All of the construction impacts, of course, would not have taken place save for this project existing, but that cannot be said of the operating impacts, since the assumption is that while the project induced some of the new activity, it did not induce 100% of it (i.e. some of that activity would've taken place anyway, without the project). As stated above, the table here shows the net impact of the project on economic activity, and in subsequent sections, we will start by showing the gross impact and then back out the "non-induced" portion of operating impact to arrive at the net impact.

In fact, this modern, state-of-the-art location is a welcome addition to a city office building inventory that is predominantly older and less attractive than the equivalent stock in the nearby suburbs, and the 732,000 square feet it has added to the local inventory has not depressed the local office space market, and has perhaps even helped contribute to an overall improvement in the market. Our analysis of recent trends in office rental rates, vacancy rates, and net absorption rates suggests a positive overall impact of the Cira Centre on the City's commercial office market.

Such impacts have resulted in significant net fiscal gains for the City and State: for Philadelphia, over $2 million upfront during construction, and from ongoing operations almost $12 million annually from 2006 to 2018 and over $18 million annually after 2018; and for Pennsylvania, almost $20 million upfront during construction, and from ongoing operations almost $11 million annually from 2006 to 2018, and almost $20 million annually after 2018 (see Table 1.2).

Table 1.2 – Fiscal Impacts of the Cira Centre on Philadelphia/Pennsylvania

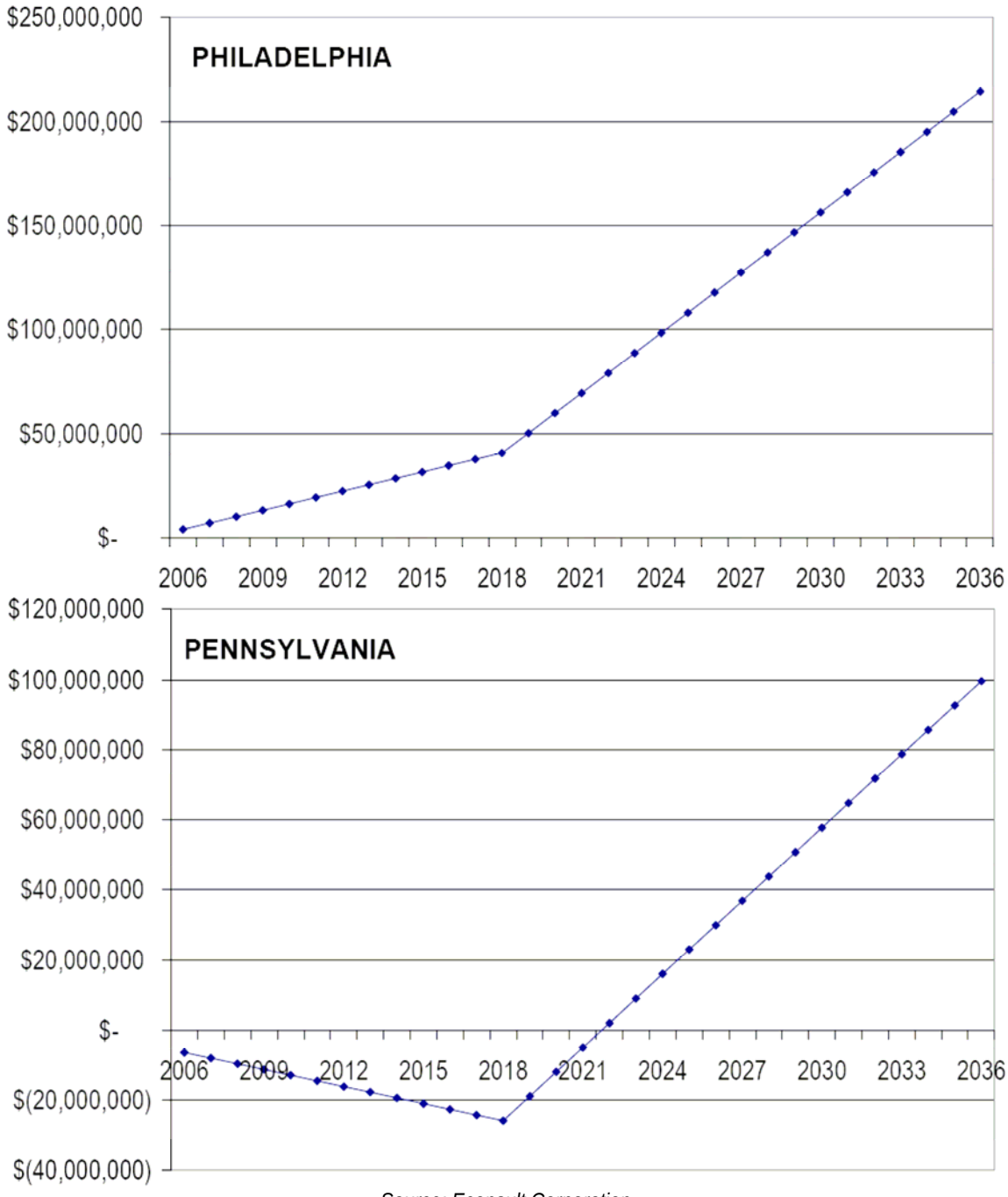
Philadelphia County Local Taxes (in $MM)	Construction (one-time and completed)	Operating (potential and annual) 2006-2018	 after 2018
Wage and Earnings (Philadelphia)	$ 2.0	$ 11.9	$ 13.5
Sales (Philadelphia)	$ 0.2	$ -	$ 0.6
Business Privilege (Philadelphia)	$ -	$ -	$ 1.2
Property - Cira only (Philadelphia)	$ -	$ -	$ 3.1
Total	$ 2.2	$ 11.9	$ 18.5

Pennsylvania State State Taxes (in $MM)	Construction (one-time and completed)	Operating (potential and annual) 2006-2018	 after 2018
Personal Income	$ 8.0	$ 11.0	$ 11.0
Sales and Use	$ 8.2	$ -	$ 5.9
Corporate Net Income	$ 2.2	$ -	$ 1.7
Capital Stock and Franchise	$ 1.4	$ -	$ 1.0
Total	$ 19.8	$ 11.0	$ 19.6

Source: Econsult Corporation

As to whether these economic and fiscal gains have made up for foregone tax revenues, our analysis shows that the fiscal revenues generated by this additional economic activity (one-time construction and annual operations) have been far greater than the foregone tax revenues at both the City and State level: a net gain of over $100 million for the City and over $20 million for the State by 2026 and a net gain of over $200 million for the City and almost $100 million for the State by 2036, when comparing the "KOIZ" scenario with a "no KOIZ scenario" (see Figure 1.1).

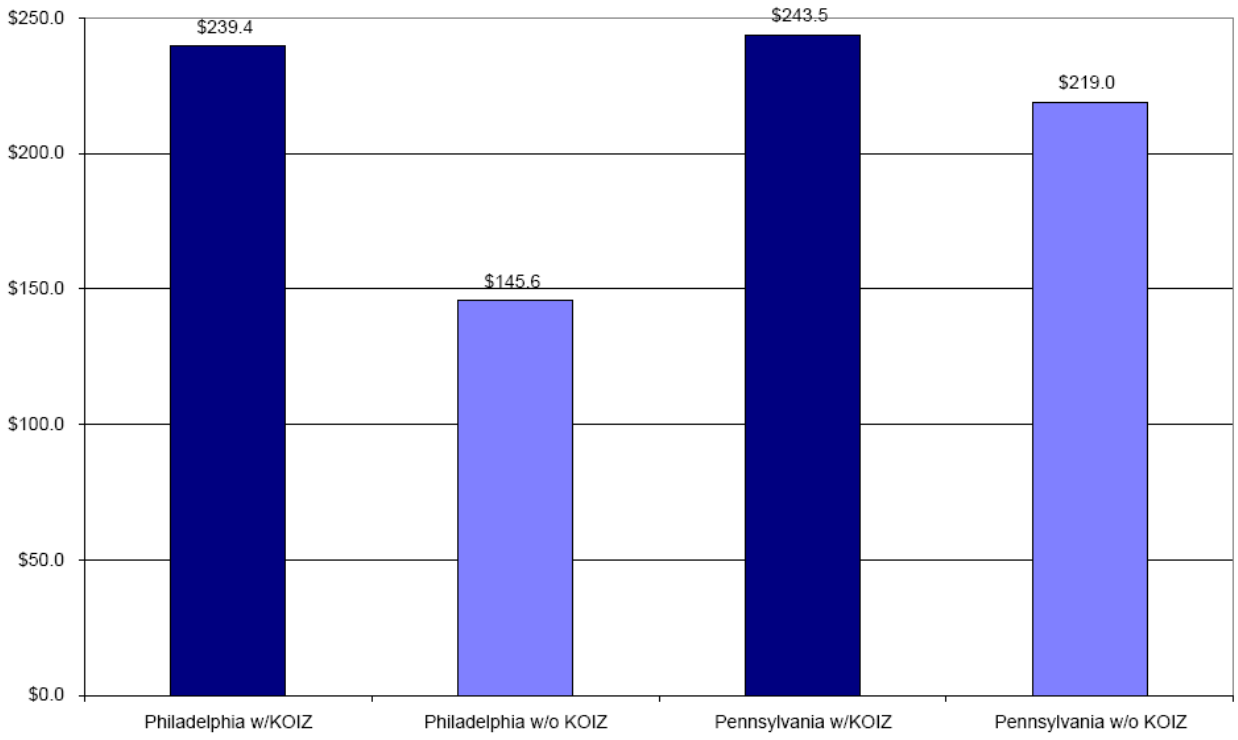
Figure 1.1 – Cumulative Gain (Loss) From KOIZ



Source: Econsult Corporation

Discounting by 5%, the present value of tax revenues for Philadelphia and Pennsylvania is as follows for our "KOIZ" and "no KOIZ" scenarios: a twenty-year net present value gain of over $60 million to the City and almost $2 million to the State and a thirty-year net present value gain of almost $100 million to the City and almost $25 million to the State (see Figure 1.2).

Figure 1.2 – Cumulative PV of Tax Revenue w/ and w/o KOIZ in $MM (2006-2036)



Source: Econsult Corporation

Finally, the project has also generated the following important, though intangible, benefits to the City:

- The addition of 2218 jobs, of which 945 are new to Philadelphia (and 790 new to Pennsylvania)
- It adds brand new, state-of-the-art space to the City's commercial office inventory, visible to millions of travelers taking Amtrak between Washington, DC and New York City
- Its connection to 30th Street Station and close proximity to many large institutions counteracts sprawl and strengthens the transit system
- It is a signature building amidst University City's rise as a destination neighborhood

- It facilitates the relocation, retention, and expansion of knowledge workers within City limits
- It strengthens the increasingly important link between University City and Center City
- It improves Philadelphia's position in the competition for high-skill jobs along the Northeast Corridor

These findings suggest that the KOIZ can be considered, in this case, a good policy intervention, in that it generated aggregate benefits in excess of aggregate costs. One must further ask, however, if this was the best policy intervention, and in particular if this specific use of tax incentives helps or hinders the City's efforts to improve its overall business climate for businesses, investors, and residents. After all, critics of the KOIZ and of similar public incentive initiatives argue that such "sweetheart deals" impair, both financially and psychologically, efforts to reduce taxes and improve services for all businesses; that altering the market with incentives will lead to an over-supply of commercial office space; and that, in general, governments do not do a good job of "picking winners and losers" when it comes to businesses, industries, and locations.

We consider these legitimate concerns, for we see them as important questions to raise and criteria to consider when evaluating public policy, and so we have also addressed them in our study. In general, we find that the KOIZ, as used by the Cira Centre, has not impaired overall City efforts to become more business-friendly. Our fiscal analysis demonstrates that the project has been a net gain and not a net loss for the City, thus providing additional funds for economic development. We also note that efforts by the City to address its overall business climate have accelerated, not slowed, since the commencement of the Cira Centre project.

Further, we find that the commercial office market has not suffered from over-supply. In fact, even with additional incentive programs (most notably the citywide ten-year property tax abatement program) fueling rapid growth in construction, vacancy rates are still at reasonable levels, indicating that the addition of the Cira Centre was a healthy one for the City.

Finally, we note the financial and intangible benefits this transit-oriented urban development have derived and will derive, particularly in terms of aggregating commercial activity and high-skilled employment within the City; in contrast, most academic research finds that the greatest real estate market distortions are caused by various federal subsidies which encourage businesses, jobs, and residences to move further away from urban centers.

2.0 INTRODUCTION

The Cira Centre is a project of Brandywine Realty Trust (BRT), a publicly traded real estate investment trust (REIT) based in Radnor, Pennsylvania. It boasts 29 floors and 731,852 square feet of office space within a distinctive exterior designed by the architectural firm Cesar Pelli & Associates, a stunning addition to the city's skyline. It is directly connected to Philadelphia's 30th Street Station, and sits at the nexus of University City and Center City. It contains a restaurant, fitness center, and concierge desk.

2.1 Overview of Construction Project and Incentive Program

The Cira Centre was completed in November 2005. The construction project was the first commercial office development in the City of Philadelphia to participate in the Commonwealth of Pennsylvania's Keystone Opportunity Improvement Zone (KOIZ). Firms located within the Cira Centre qualify for many incentives through the end of 2018 (see Table 2.1).[2]

Table 2.1 – KOIZ Tax Incentives

Commonwealth of Pennsylvania	City of Philadelphia
• bank shares tax	• business privilege tax
• capital stock / foreign franchise tax	• net profits tax
• corporate net income tax	• real property tax
• insurance gross premiums tax	• sales and use tax
• mutual thrift institutions tax	• use and occupancy tax
• personal income tax	
• sales and use tax	

Source: Cira Centre website

[2] From the CIRA Centre website: "Benefits and abatement based on individual company structure and qualification."

2.2 Arguments For and Against KOIZ

Proponents of the KOIZ, and of its use in the case of the Cira Centre, argued that such an improvement zone would lead to the attraction, retention, and expansion within City limits of knowledge businesses in such industries as law, financial services, and technology, and make possible the construction of new, transit-oriented commercial office space. Critics countered that such market-altering incentives would lead to an oversupply of commercial office space, and that the incentive would give BRT an unfair advantage over other private developers.

Furthermore, the use of the KOIZ designation for the Cira Centre generated a peculiar debate, as opponents, most notably landlords of other Center City and University City office buildings, felt it was unfair to reward the Cira Centre's high-end tenants at the expense of other City taxpayers. Such a use of the tax incentives, they claimed, would lead to a "musical chairs" effect of firms hopping around without the City enjoying any overall growth.

2.3 The Mechanics of Commercial Real Estate Markets

Like all goods, commercial office space is subject to the economic forces of supply and demand. Lengthy imbalances between supply and demand are disastrous for a city: oversupply deflates prices, and undersupply causes businesses and jobs to leave. What a city hopes for, therefore, is an ever-rising demand for commercial office space, met by an ever-rising supply of it. Of course, buildings deteriorate over time, so even in the absence of new demand, existing buildings would have to be renovated and/or new buildings constructed; and with the increase in demand for higher-quality office space, there is even more pressure for new construction, as reinvesting in existing stock simply cannot meet such needs[3].

Given the scale and cost involved in office buildings, these additions to supply are not small and constant, but rather large and periodic. The "lumpiness" of building supply, then, leads to pronounced cycles, both nationally and locally, and are influenced even further by macro-economic factors such as interest rates and materials costs. When developers decide to construct a new office building, they are bearing the risk that the surplus demand they are meeting will generate revenues in excess of their construction costs, given all of these local and national factors.

2.4 Commercial Real Estate in Philadelphia

Philadelphia's inventory of recently constructed buildings has been given a recent boost, with its heretofore successful property tax abatement program, which has induced a healthy amount of new residential construction in a diversity of neighborhoods for a wide range of uses. Given the importance of modern and

[3] In many cases, some of Philadelphia's older office buildings have been either demolished or converted to other, non-office uses.

efficient office buildings to a city's economic health (and the danger of losing tenants to nearby suburbs which have a better inventory of such office choices[4]), municipalities should certainly consider effective interventions to achieve a similar boost on the commercial side. Indeed, government interventions like this one have played an important role in practically every expansion of commercial real estate in the City over the past 50+ years.

2.5 Cost-Benefit Analysis

This study identifies and estimates the economic and fiscal benefits associated with the Cira Centre, and compares those with the fiscal "investment" made in the project, in the form of foregone City and State taxes. In other words, we can answer three important public policy questions that ought to be asked in cases of public intervention in private development:

1. Did the foregone city and state taxes "work" to generate additional economic activity, and

2. Were the fiscal revenues generated by this additional economic activity greater than the foregone tax revenues, and if so, how much greater?

3. Does the investment generate qualitative and intangible benefits for the City and State?

The next two sections demonstrate that the Cira Centre has already had a very strong net[5] economic and fiscal impact on the City, and that the fiscal revenues generated by this additional economic activity have been far greater than the foregone tax revenues at both the City and State level.

[4] Dave Morris, senior vice president at Grubb & Ellis|Gundaker Commercial, was quoted in the June 23, 2006, issue of St. Louis Business Journal about the relative attractiveness of Clayton, a suburb eight miles outside of St. Louis, over downtown St. Louis: "Nothing is new downtown; the story is the same. Downtown has an aging population; the newest building is 18 years old. So it's starting to face functional obsolescence, because it's not designed for dense offices of today. Workstations are now fitting more people in less square footage."

[5] I.e. net of any displacement effects.

3.0 METHODOLOGY

In determining the difference the Cira Centre has made to the City of Philadelphia and the Commonwealth of Pennsylvania, we must isolate and measure its incremental impact in the following economic and fiscal categories:

- Economic activity
- Earnings
- Employment
- Office space absorption
- City tax revenues
- State tax revenues

3.1 Input-Output Model

Any expenditure generates additional economic activity in a particular geographic area via the mechanism of the Keynesian consumption multiplier, an established behavioral characterization of the nature of economic activity in a market economy. In other words, in measuring the true economic impact of an initiative, one must account for the countless inter-industry relationships within a region, and specifically the manner in which an increase in output in a particular industry results in increases in outputs by other industries. We are able to estimate this multiplier effect of expenditures directly generated by the Cira Centre project by using data collected by the US Department of Commerce's Regional Input-Output Modeling System (RIMS II). See Appendix D for more detail on our methodology.

3.2 KOIZ Evaluation Model

In theory, when it comes to tax incentive programs like the KOIZ, the revenues foregone from initial taxes abated are supposed to be offset by the revenues gained from the expansion of the tax base caused by the program. In order to determine whether this has happened in practice, and in general to determine the overall fiscal impact of the KOIZ on the City, we must then calculate all of the relevant flows. The model we have created to perform these calculations considers the following tax amounts:

Pluses	Minuses
• Other taxes generated during the construction phase	• Initial taxes foregone as a result of the abatement program
• All taxes currently generated and predicted to be generated	• All taxes that the City would have earned anyway because they were from businesses already in the City[6]

[6] Alternatively, you can consider the net of this row as the incremental taxes generated by the project that otherwise would not have been earned by the City.

4.0 ECONOMIC AND FISCAL IMPACT

As explained above, any expenditure generates additional economic activity in a particular geographic area via the mechanism of the Keynesian consumption multiplier. Using the US Department of Commerce's RIMS II model, we can sum the direct and induced output for each aspect of the Cira Centre project (initial construction and ongoing operations) to determine its overall economic impact on output, earnings, and employment. We can then accumulate the fiscal gains that accrue to the City and State as a result of this increased activity. Finally, we can compare these additional gains over time to the revenues foregone as a result of the various tax incentives extended to the building and its tenants.

Thus we can answer three important questions related to the Cira Centre project and whether its initial public subsidy was good policy:

1. Did the foregone city and state taxes "work" to generate additional economic activity (Sections 4.1, 4.2, and 4.3)?

2. Will the fiscal revenues generated by this additional economic activity be greater than the foregone tax revenues, and if so, how much greater (Section 4.4)?

3. Are there any other intangible benefits to consider (Section 4.5)?

4.1 Construction Phase

The Cira Centre's initial economic and fiscal impacts were generated from the project's significant upfront construction expenditures,[7] namely the purchases of labor and materials for the building of the physical plant. The construction of the Cira Centre was a massive undertaking that has had a multiplier effect on output, earnings, and employment throughout the City and State. Our calculations yield the following one-time gains to the City and State (see Table 4.1).

Table 4.1 – Economic Impact of the Cira Centre Construction Phase on Philadelphia/Pennsylvania

Construction (one-time and completed)		
	Philadelphia County	Pennsylvania State
Direct Expenditures ($MM)	$ 231.9	$ 231.9
Indirect & Induced Expenditures ($MM)	$ 110.6	$ 329.2
Total Output ($MM)	$ 342.5	$ 561.2
Multiplier	1.5	2.4
Total Employment	1,472.6	4,908.2
Total Earnings ($MM)	$ 55.8	$ 181.5
Average Wage	$ 37,864	$ 36,984

Source: Econsult Corporation

Thus, the construction phase has produced a significant one-time benefit for Philadelphia and Pennsylvania: over $340 million in output, supporting almost 1500 jobs and over $55 million in earnings for Philadelphia, and over $560 million in output, supporting almost 5000 jobs and over $180 million in earnings for Pennsylvania.

[7] See Appendix A for a breakout of costs and assumptions related to construction.

4.2 Ongoing Operations

Building operations and maintenance, as well as the proportion of tenant operating expenses generated by new and relocated tenants, represent net new activity to the area. These ongoing expenditures are anticipated to annually generate meaningful economic impacts via indirect and induced spending throughout the local economy, resulting in increased earnings and employment across the City and State. We estimate the following potential ongoing gains (see Table 4.2).

Table 4.2 – Gross Annual Economic Impact of the Cira Centre Ongoing Operations on Philadelphia/Pennsylvania

Operating (potential and annual)		
	Philadelphia County	Pennsylvania State
Direct Expenditures ($MM)	$ 139.2	$ 139.2
Indirect & Induced Expenditures ($MM)	$ 80.6	$ 172.8
Total Output ($MM)	$ 219.8	$ 312.0
Multiplier	1.6	2.2
Total Employment	3,911.0	5,398.0
Total Earnings ($MM)	$ 192.3	$ 251.3
Average Wage	$ 49,157	$ 46,551

Source: Econsult Corporation

Of course, while none of the construction impacts would have taken place save for this project existing, the same cannot be said of the operating impacts, since the assumption is that while the project induced some of the new activity, it did not induce 100% of it (i.e. some of that activity would have taken place anyway, even without the Cira Centre). The table above, then, shows the gross impact of the Cira Centre in terms of ongoing operating expenditures and the indirect and induced expenditures they support.

We can estimate and subtract out the "non-induced" portion of operating impact to arrive at the net impact of the project on economic activity (i.e. the incremental gain in ongoing annual economic impact as a result of the Cira Centre). We assume that since 945 of the building's 2218 jobs are new to Philadelphia and that 790 of its jobs are new to Pennsylvania[8] (see Figure 4.1), this can serve as a reasonable proxy for the

[8] "New" as in jobs that did not previously exist in Philadelphia/Pennsylvania.

proportion of net economic activity that was generated by the project.[9] The net Philadelphia numbers, then, are the equivalent numbers from Table 4.2, multiplied by 945 ÷ 2218 = 42.6%, and the net Pennsylvania numbers are the equivalent numbers from Table 4.2, multiplied by 790 ÷ 2218 = 35.6% (see Table 4.3).

Table 4.3 – Net Annual Economic Impact of the Cira Centre Ongoing Operations on Philadelphia/Pennsylvania

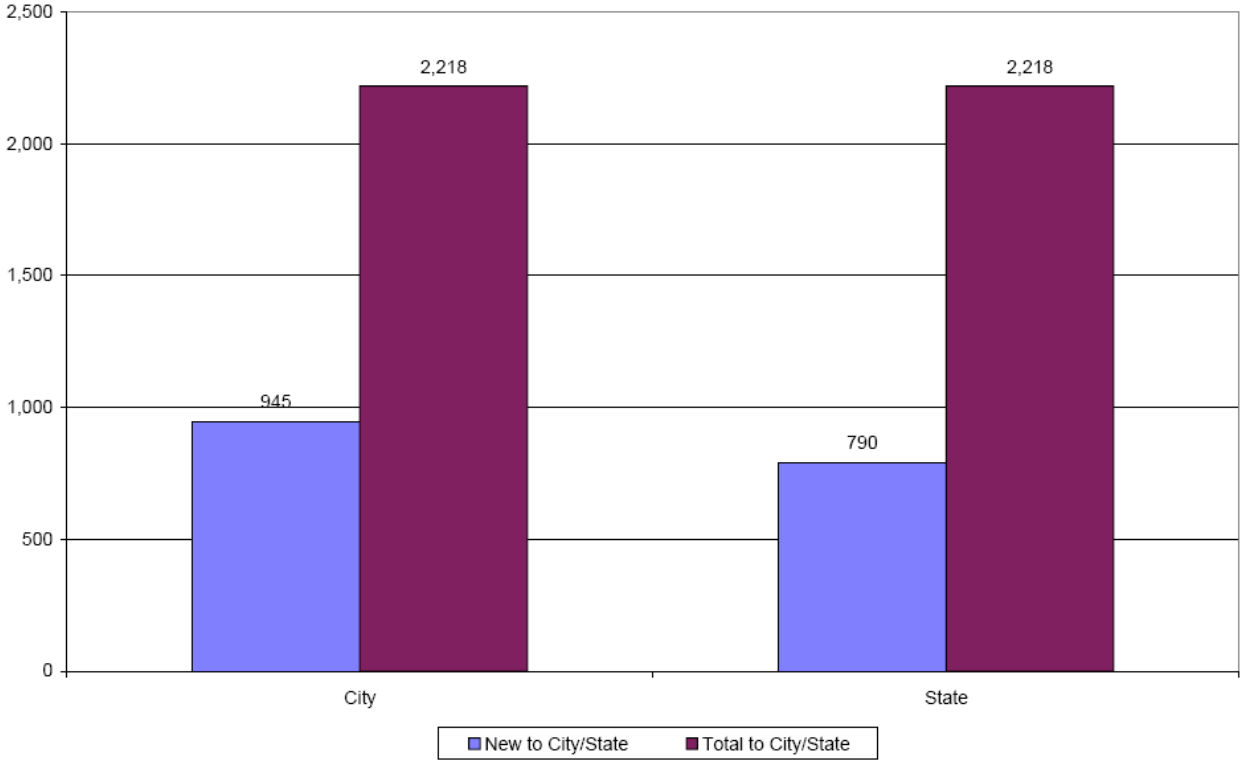
Operating (net induced) (potential and annual)		
	Philadelphia County	Pennsylvania State
Direct Expenditures ($MM)	$ 59.3	$ 49.6
Indirect & Induced Expenditures ($MM)	$ 34.3	$ 61.5
Total Output ($MM)	$ 93.6	$ 111.1
Multiplier	1.6	2.2
Total Employment	1,666.3	1,922.6
Total Earnings ($MM)	$ 81.9	$ 89.5
Average Wage	$ 49,157	$ 46,551

Source: Econsult Corporation

To summarize, both tables show the economic impact the Cira Centre makes each year. The table that shows gross figures represents the overall annual impact of the activity within the building. The net figure backs out the amount of impact that would have happened anyway without the project, and is therefore the incremental impact the project is anticipated to generate for Philadelphia and Pennsylvania. That impact is significant: annually over $90 million in new output, supporting over 1600 new jobs and over $80 million in new earnings for Philadelphia, and over $110 million in new output, supporting over 1900 new jobs and almost $90 million in new earnings for Pennsylvania.

[9] If anything, this might be a conservative proportion, for although it assumes that none of the jobs new to Philadelphia/Pennsylvania would have otherwise been created in Philadelphia/Pennsylvania, it also assumes that none of the jobs already in Philadelphia/Pennsylvania would have, but for the Cira Centre, left Philadelphia/Pennsylvania.

Figure 4.1 – Immediate Impact of Cira Centre on Jobs in Philadelphia/Pennsylvania

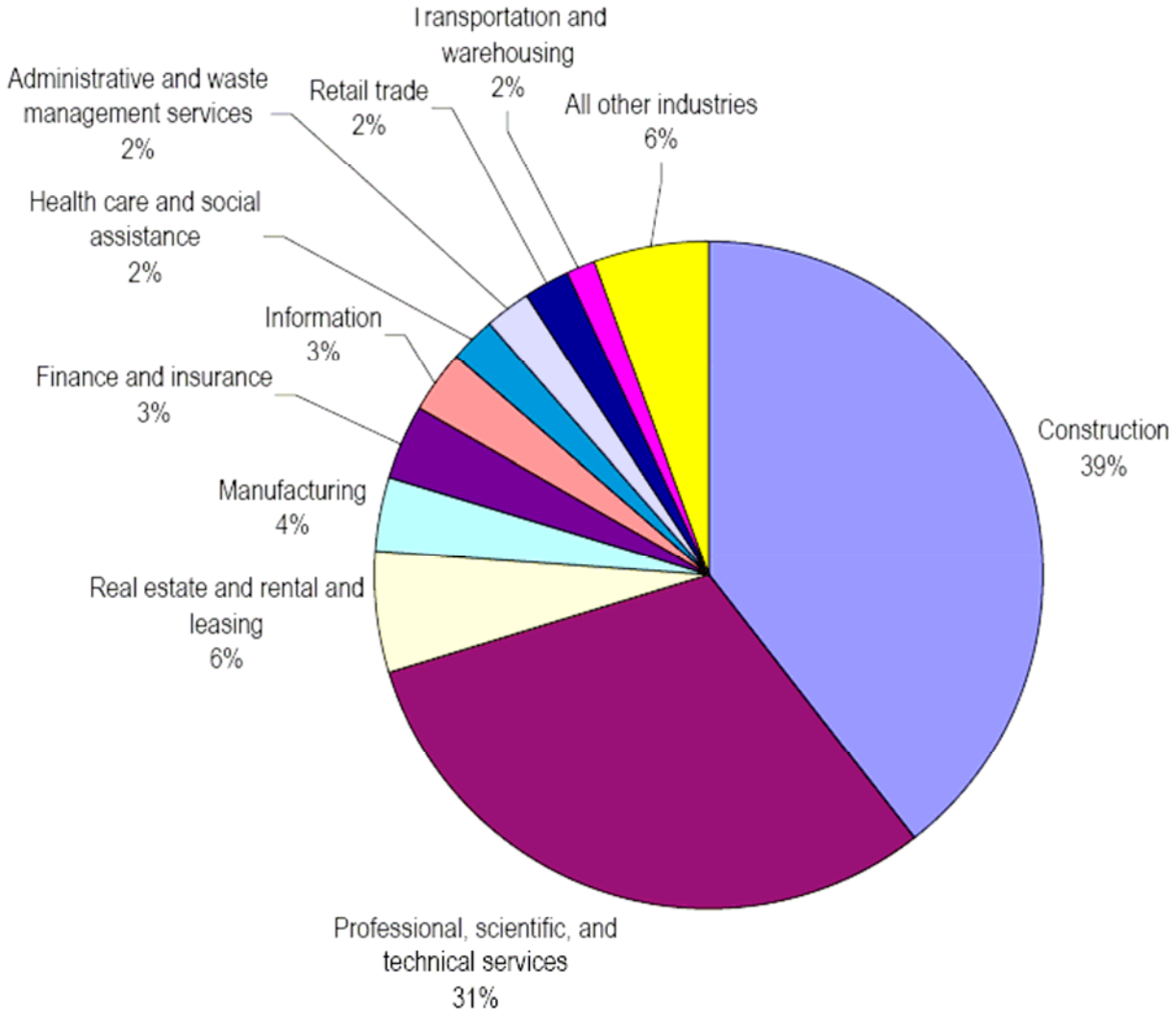


Source: Brandywine Realty Trust

Together, the positive economic impact of the initial construction and ongoing operations of the Cira Centre has been widely enjoyed by a diversity of industries across the City and State (see Figure 4.2 and 4.3).[10]

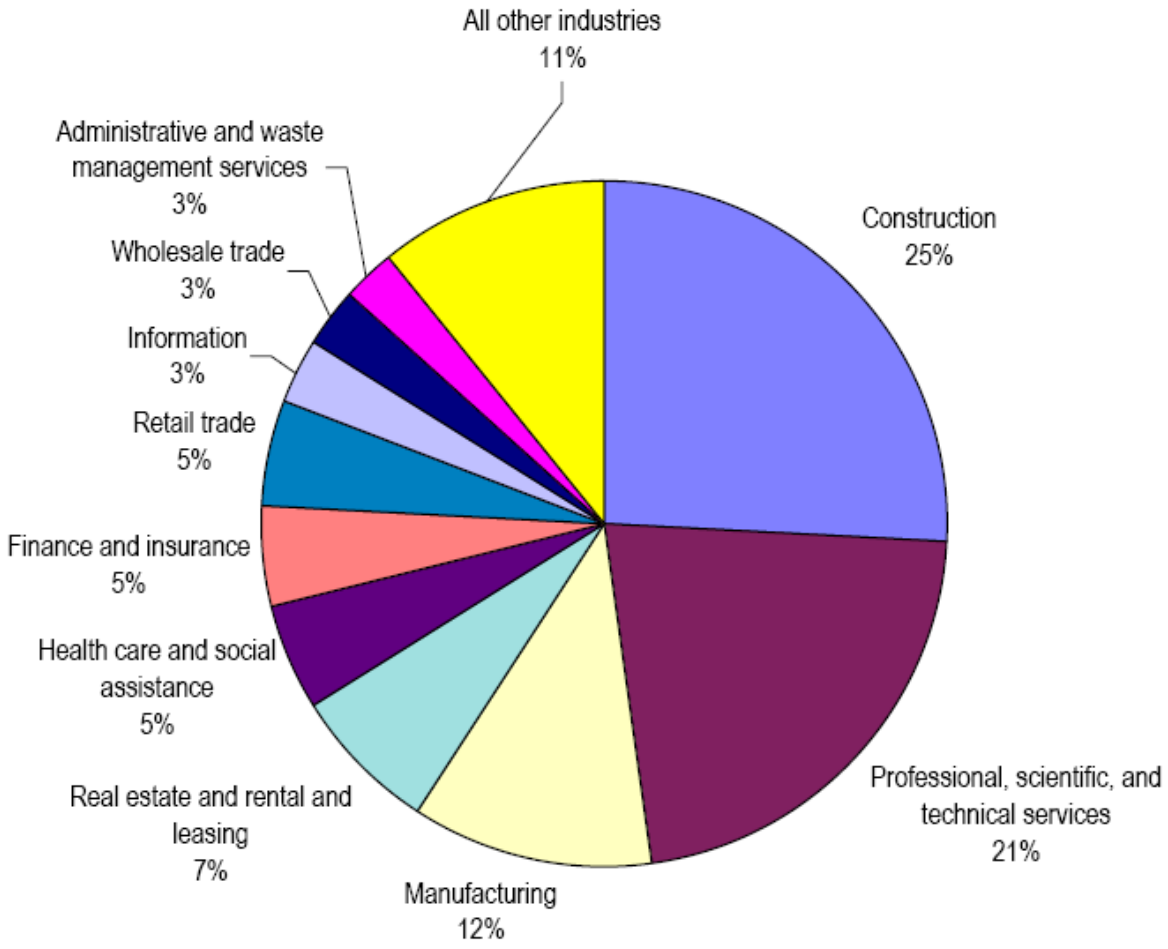
[10] Additional tables and charts may be found in Appendix B.

Figure 4.2 – Allocation of Economic Impact by Industry (Philadelphia)



Source: Econsult Corporation

Figure 4.3 – Allocation of Economic Impact by Industry (Pennsylvania)



Source: Econsult Corporation

4.3 Real Estate Impacts

So far, we have looked at the economic impact of the Cira Centre's upfront construction and ongoing operations, and in the next section we will focus on its fiscal impact in terms of initial tax revenues foregone and greater tax revenues generated over time. However, we must also consider the impact of the building on the city's office market, and the economic and fiscal implications of this new addition.

In general, opponents advanced two arguments: a philosophical one and a practical one. The philosophical case against KOIZs was that it is wrong for government to "play favorites": granting specific properties, firms and projects favorable treatment at the expense of their competition.

The practical argument against using KOIZs was more empirically based: that it simply didn't make economic sense to promote the construction of a new office tower at a time when the local office market was currently beleaguered by relatively high vacancies, flat rents and sluggish prices. Not only would subsidizing a new office tower represent a misallocation of economic resources, but adding more square footage to an already slack market could exacerbate an already weakened office market. Hence, opponents of the use of KOIZs for Cira Centre predicted higher vacancies and lower rents and prices as a result of the new construction, both in terms of the precedent it set as a use of KOIZ and of the actual addition of physical office space to the Center City office market.

While we address the philosophical argument elsewhere in this report, here we address the economic one. In particular, now that Cira has been built and leased up, have the dire predictions of its opponents come true? One study that put specific numbers on the predicted outcome was "The CBD Philadelphia Office Market Today and Tomorrow: The Impact of KOIZs," by Kevin Gillen, a real estate expert and economic researcher from the Wharton School of Business. The report outlined and estimated a structural model of Philadelphia's downtown office market, offering some predictions about the effect of adding new space there.

If substantial amounts of new square footage are added to an existing market, then economic forces will compel at least one of the following three things to occur in order to move the market towards a new equilibrium:

- Capitalization rates must fall – and prices subsequently rise – in order to push prices back up to be in line with building construction and replacement costs; or
- Office employment levels must rise in order to occupy the new space – and keep prices at their current equilibrium levels; or
- Existing older space that becomes vacated will become abandoned or converted to other uses (e.g. residential).

Of course, some combination of these three outcomes is also possible, but it was this last outcome that KOIZ opponents predicted as being most likely to occur. The basic reasoning for it was that adding new space (and space which also carried substantial tax advantages for its occupants) to an already slack

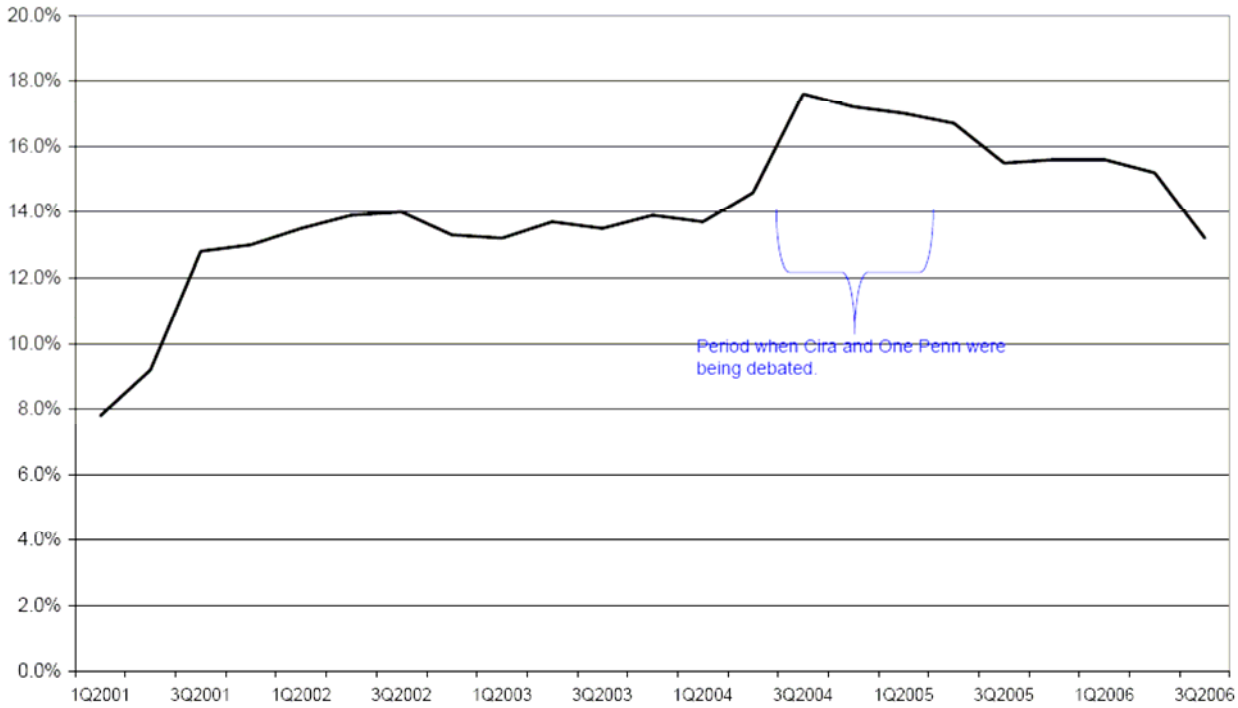
market would simply re-shuffle Center City's current office tenants over more square footage, with the oldest and most depreciated buildings going vacant, and eventually becoming abandoned, demolished, or converted to another use (and one with a lower rent and/or price) than office space. Clearly, the first two of these outcomes are to the City's economic and fiscal detriment, while the third could be either good or bad for the City. So, while the city would experience some gains from the construction of a new tower, its opponents envisioned that these would be significantly mitigated and even offset by the losses of existing space going vacant.

Fortunately for the purposes of our study, all of these variables are actively tracked by the Philadelphia offices of several large commercial brokerage firms. The debate over the Cira Centre and One Pennsylvania Plaza took place in 2004, so we gathered data for the periods before, during and after these discussions, and plotted them over time. Each of the trends in these variables can be examined over time, to compare actual trends to the forecasts of the KOIZ's critics. Thus we can measure the effect the discussion over the use of the KOIZ for the Cira Centre (as well as the actual construction of the Cira Centre and thus its addition to the local inventory of office space) had on the local real estate market.

4.3.1 Vacancy Rates

We begin by first looking at the trend in vacancy rates, from 2001 to 2006 (see Figure 4.4). The general trend in office vacancy rates prior to and during the debate would seem to support the opposition's case. From a five-year low of 8% in early 2001, vacancies had climbed to nearly a peak of 18% by late 2004.[11] Although some vacancy is common even in the hottest markets (just due to secular tenant turnover), a double-digit vacancy rate would typically not indicate a market where demand is sufficient to support new construction.

Figure 4.4 -- Office Vacancy Rate in Philadelphia CBD



Source: several major commercial brokerage firms in Philadelphia

However, subsequent to 2004, the trend in vacancy has actually been downward, dropping to 15%. While this level of vacancy would still typically be considered too high to rationalize any new speculative

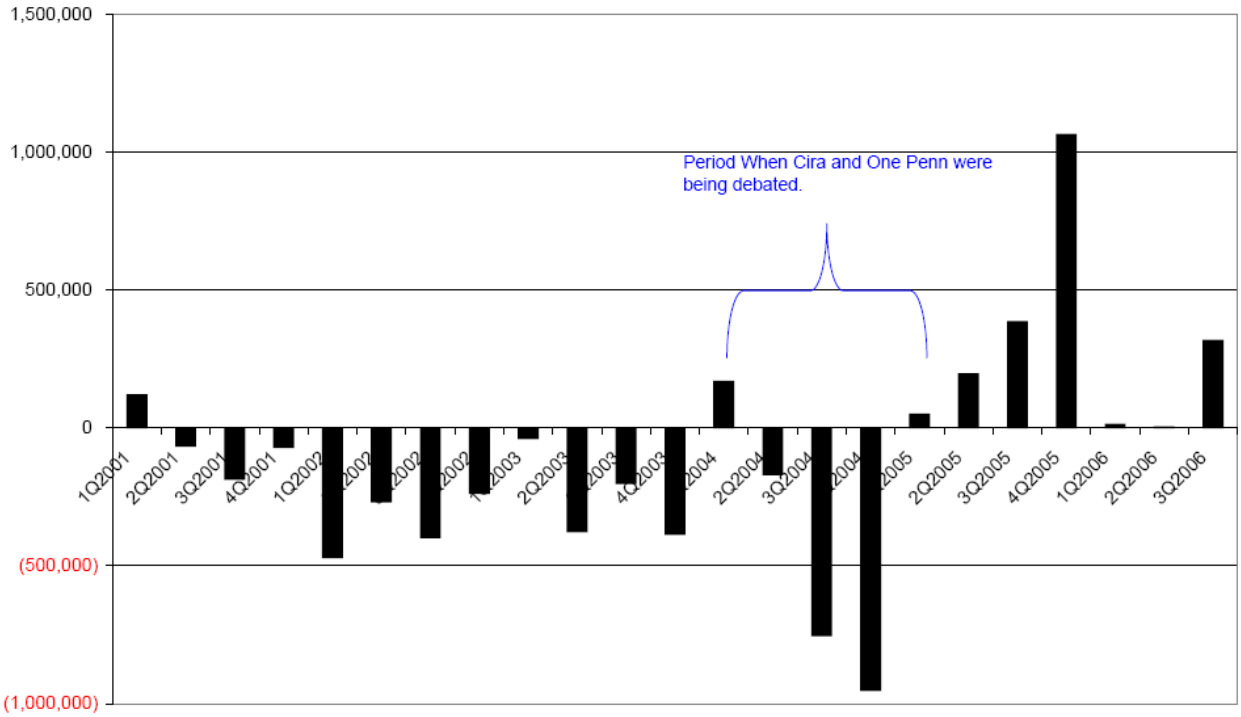
[11] This peak in vacancy corresponded with a unique market environment that may have caused the vacancy rate to temporarily run above trend: a large number of leases in the Class A office market, which were built in the 1990's, matured during this period. Many large companies engaged in significant downsizing at this time, even while keeping their offices in Center City. A review of existing conditions suggests that such a confluence of downsizing will not be repeated in the near future.

construction, it does indicate that the addition of the Cira Centre's 732,000 new square feet to the city's office stock has at least not exacerbated the problem. Thus, the prediction of higher vacancy as a result of the addition of the Cira Centre appears to have not come true.

4.3.2 Absorption Rates

Next, we examine trends in the absorption of office space (see Figure 4.5). Absorption in real estate markets refers to the net square footage added to a market and leased up, or net square footage that goes vacant. It is typically computed as the difference between recently leased space (either previously vacant or new construction) and recently vacated space. A positive absorption figure indicates that more space was leased up than was vacated, while a negative figure indicates that more space was vacated than leased. Hence, positive absorption is symptomatic of an expanding, desirable market, while negative absorption suggests a contracting and undesirable one.

Figure 4.5 -- YTD Absorption in Philadelphia CBD (in SF of office space)



Source: several major commercial brokerage firms in Philadelphia

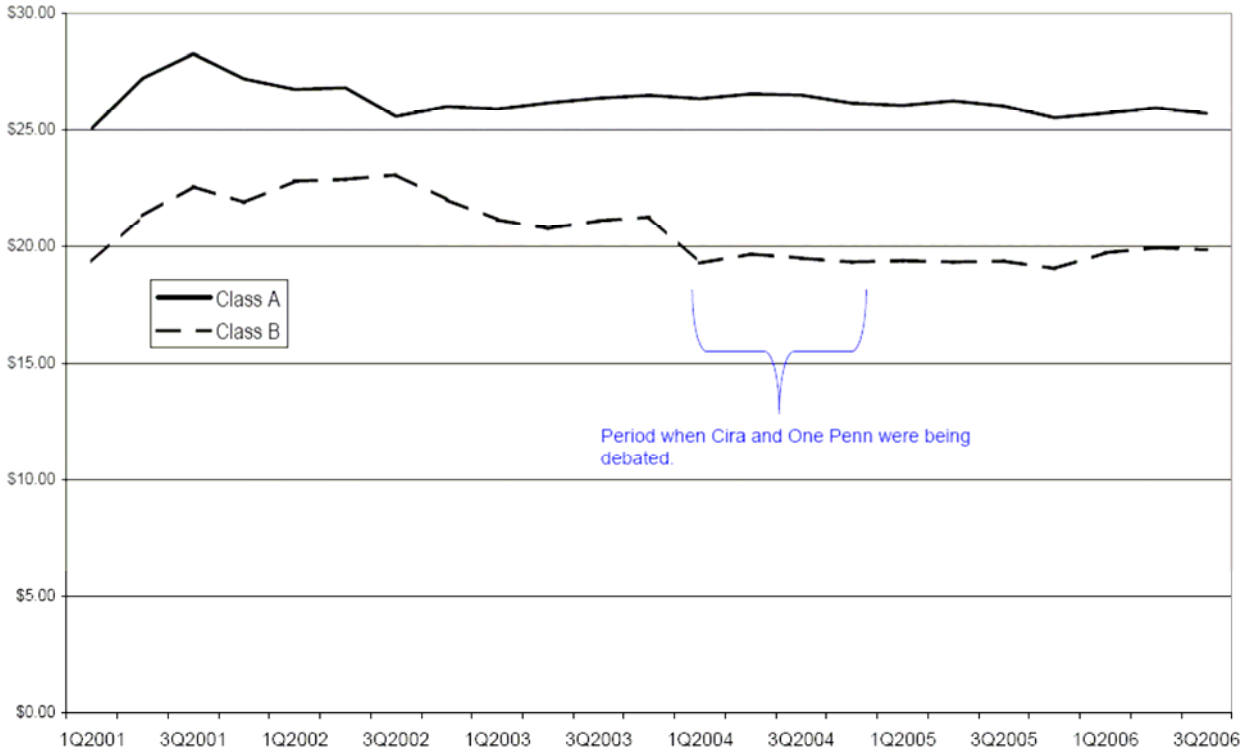
Absorption shows a similar trend to vacancy. During the 2004 period of debate, absorption was largely negative, and trending downwards as well. By the end of the year, nearly 1 million more square feet of office space had been vacated than leased up. And, consistent with the vacancy figures, it would seem understandable why KOIZ opponents at the time would oppose the addition of new space to a contracting and declining market when faced with these numbers.

But, subsequent to 2004, this trend also reversed itself. Beginning in 2005, net absorption became positive and trended upwards for the remainder of the year. By the end of year, more than 1 million square feet of space had been leased up than had been vacated. This not only mitigates the losses from 2004, but more than offsets it. In 2006, absorption has been low, but still positive. This suggests that the addition of Cira may have tempered the upward trend somewhat, but that the overall level of demand for Philadelphia office space has been sufficient to support Cira's addition to the city. The addition of Cira does not appear to have caused more vacancies than occupancies.

4.3.3 Office Rents

The next variable we examine is office rents. Figure 4.6 plots average rent/SF over time, for both Class A and Class B office space in Center City.

Figure 4.6 -- Average Class A and B $Rent/SF in Philadelphia CBD



Source: several major commercial brokerage firms in Philadelphia

As the plot indicates, Class B rents seem to exhibit a slightly more downward trend than Class A, but overall rents seem to have been largely flat during this entire five-year period. The period of the debate over KOIZs occurred during and immediately after a downturn in Class B rents, which may have led opponents to believe this trend would not only continue, but be exacerbated by the addition of new space to the Philadelphia market.

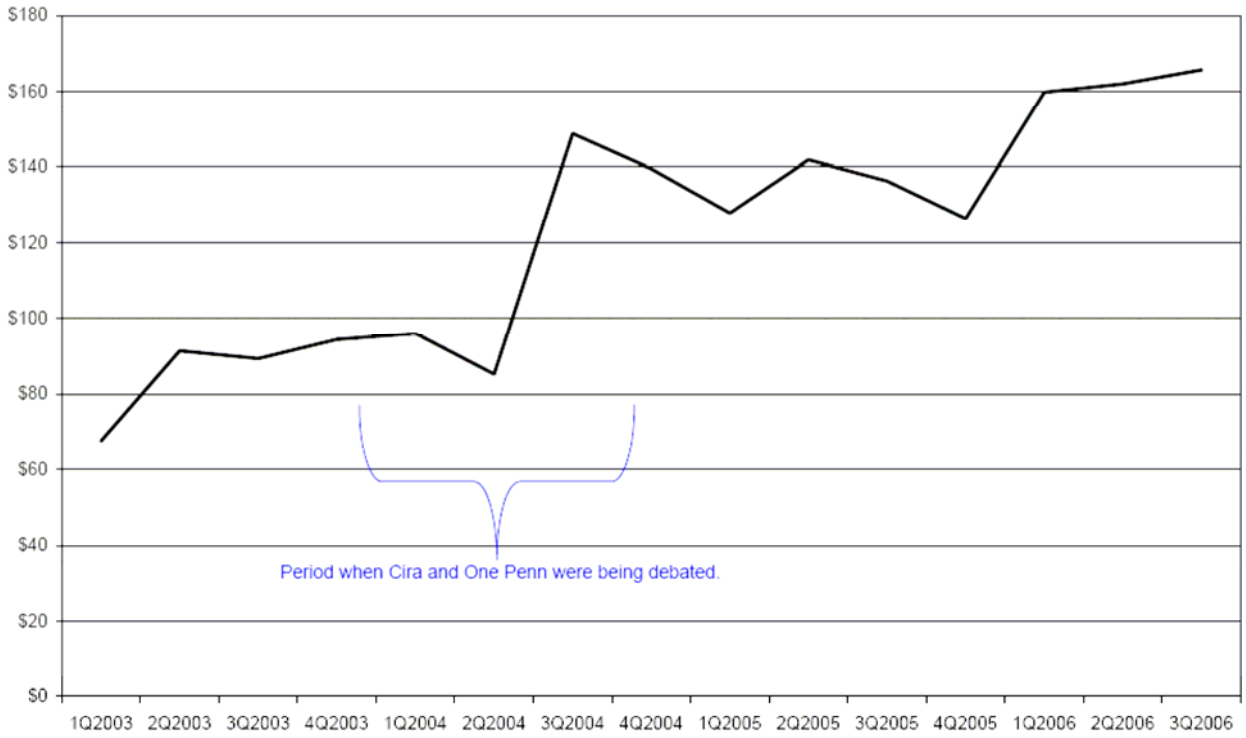
Once again, this prediction did not materialize. Demand for Philadelphia office space appears to be sufficient to absorb the addition of the Cira Centre to the stock of space, especially given the high percentage of the building's space that is being leased to companies from outside Philadelphia. Like

vacancies and absorptions, rents did not plummet, much less even drop, as a result of the addition of the Cira Centre to the city's office space inventory.

4.3.4 Price

The final variable we examine is an outcome that captures all of these factors: price. If vacancies and absorption are indicators of supply of office space, while rents and capitalization rates[12] are indicators of demand for office space, then at their intersection lies price. The price of office space could be considered the final outcome of a functioning market because it capitalizes all of the aforementioned information in the perceived and total value of office space. This is because the true value (i.e. price) of any asset is simply the present discounted value of the income stream it generates. If in 2004, the critics of the Cira Centre were correct in their pessimism, then increased supply, higher vacancies, negative absorption and lower rents would all uniformly work to lower the value of Philadelphia's stock of office space. To examine for the veracity of this or not, we plot the trend in the average price/SF over time (see Figure 4.7).

Figure 4.7 -- Average $Price/SF of Office Space in Philadelphia CBD



Source: several major commercial brokerage firms in Philadelphia

[12] A plot of capitalization rates was not presented in this analysis because they are not directly observable. Usually, they are imputed by taking the ratio of net rents (gross rents minus vacancies, operating expenditures, and property taxes) to prices. Rather, we examine prices instead of capitalization rates.

During the period of the debate, prices had been generally flat, and even ticked slightly downwards in early 2004. This flat-to-declining trend may have again led critics to make such pessimistic predictions. However, their prediction stands in fairly stark contrast to reality. Following the 2004 debate, the level of prices rose quite sharply from an average of $85/SF to $150/SF, where it remained essentially stable for a year. More recently, average prices rose another $25/SF, at the same time the Cira Centre was completed and move-ins began. Indeed, it seems that the level of demand for Philadelphia office space has been sufficient to support the addition of new space in general, and the Cira Centre in particular.

The empirical data do not appear to support in any way the critics' predictions that the granting of KOIZ status to the Cira Centre and then the actual construction of the Cira Centre would result in higher vacancies, lower rents and lower prices. In fact, the data seem to demonstrate that the opposite has taken place: vacancies have fallen, net absorption has become positive, rents have remained stable, and average prices have increased. To date, it is clear that the local market has successfully absorbed the addition of the Cira Centre to the city's office stock.

A final question may be posed: why is this? It is fairly well known that the general level of demand in Philadelphia has not dramatically risen during this period, as vacancies still remain fairly high, rents have been flat, and no major employers have significantly expanded their downtown workforce. The answer may be found by looking at two other variables: capitalization rates and supply.

First, interest rates over the past several years have declined to historic lows. Since capitalization rates are really just a spread over interest rates, then low interest rates have translated into low capitalization rates, which have helped to support higher prices. In addition, historically low interest rates have helped fuel another real estate phenomenon: the recent housing boom. Like capitalization rates, mortgage rates can also be interpreted as a spread over interest rates, and with historically low interest rates has come historically low mortgage rates. As a result, consumer-driven demand for housing has seen double-digit appreciation in many markets of the country, including many parts of Philadelphia.

As office rents remain flat and vacancies stay relatively high, many owners have chosen to respond to this housing boom by converting their office space to residential space. Whether apartments or condos, these properties have effectively exited the office market and entered the residential market, thus effectively drawing down on the existing supply of space at the same time that Cira is adding to it.[13] This in turn has mitigated against the pessimists' scenario of "dumping" additional new space onto a market already suffering from a surplus of it, and thus avoiding any dramatic downturns.

In summary then, the critics' economic argument appears to have been overstated, if not outright wrong. The addition of the Cira Centre to the city's office supply did not lead vacancies to spike, rents and prices to plummet, and the market to crash. On the contrary, several Philadelphia office market indicators have remained stable during this period, while others have shown improvement. Steady demand, lower interest

[13] Owners of the least efficient office buildings are the most motivated to perform such conversions, so while an "office to residential" conversion is usually seen as a downgrade for the City, in this case, the addition of very efficient office space helped along the subtraction of very inefficient office space, a process that can be seen as a net gain for the City.

rates and residential conversions have all moved in favorable directions to support the successful absorption of the Cira Centre in Philadelphia.

4.4 Fiscal Impacts

The economic impacts described in the previous sections create for the City and State upfront and ongoing tax revenues: for Philadelphia, over $2 million upfront during construction, and from ongoing operations almost $12 million annually from 2006 to 2018 and over $18 million annually after 2018; and for Pennsylvania, almost $20 million upfront during construction, and from ongoing operations almost $11 million annually from 2006 to 2018, and almost $20 million annually after 2018 (see Table 4.4).

Table 4.4 – Fiscal Impact of the Cira Centre's Upfront Construction and Ongoing Operations on Philadelphia/Pennsylvania[14]

Philadelphia County Local Taxes (in $MM)	Construction (one-time and completed)	Operating (potential and annual) 2006-2018	 after 2018
Wage and Earnings (Philadelphia)	$ 2.0	$ 11.9	$ 13.5
Sales (Philadelphia)	$ 0.2	$ -	$ 0.6
Business Privilege (Philadelphia)	$ -	$ -	$ 1.2
Property - Cira only (Philadelphia)	$ -	$ -	$ 3.1
Total	$ 2.2	$ 11.9	$ 18.5

Pennsylvania State State Taxes (in $MM)	Construction (one-time and completed)	Operating (potential and annual) 2006-2018	 after 2018
Personal Income	$ 8.0	$ 11.0	$ 11.0
Sales and Use	$ 8.2	$ -	$ 5.9
Corporate Net Income	$ 2.2	$ -	$ 1.7
Capital Stock and Franchise	$ 1.4	$ -	$ 1.0
Total	$ 19.8	$ 11.0	$ 19.6

Source: Econsult Corporation

In comparing tax revenues in a "with KOIZ" scenario and a "without KOIZ" scenario, we must carefully account for a variety of tax-related issues. Of course, the most significant element here is the abatement of many taxes within the KOIZ. To be conservative, we assume that from 2006 to 2018 the "with KOIZ" scenario will generate no revenues from tax categories for which there are incentives, even though it is likely that some of the indirect and induced economic activity resulting from the Cira Centre's existence will take place outside of tax-incentive zones and therefore be subject to taxation. Thus, the "with KOIZ" scenario shows tax revenues for non-abated taxes from 2006 on, and all other tax revenues from 2018 on.

[14] The "wages and earnings" line under local taxes includes net profit taxes from partnership distributions, our calculation of which is described below.

As for the "without KOIZ" scenario, we must estimate the amount of taxable activity that would have taken place even in the absence of the Cira Centre. As calculated in the previous section, given that the Cira Centre generated 945 new jobs for Philadelphia and 790 new jobs for Pennsylvania out of a total of 2218 jobs, we can use these proportions as a proxy for the amount of economic activity that was induced by the KOIZ: for Philadelphia, 945 ÷ 2218 = 42.6%, and for Pennsylvania, 790 ÷ 2218 = 35.6%.

Bringing these two points together, the "with KOIZ" scenario assumes the full base of activity quantified in Section 4.2, but produces revenues only from non-abated taxes from 2006 to 2018, and then from all taxes after 2018. In contrast, the "without KOIZ" scenario calculates ongoing tax revenues only from the base of activity that would have taken place anyway, but loses no revenues to tax abatement.[15]

We must further account for two additional wrinkles. First, because firms do not pay Philadelphia wage tax on distributions to partners, we had to treat their compensation differently. Subtracting their compensation from the wage tax base lowers the wage tax revenue that would be collected. Adding that amount to the net income tax base increases the net income tax revenue that would be collected. Even though the two tax rates are essentially identical, because net income tax is abated in the KOIZ but wage tax is not, this classification results in the City foregoing tax revenues on partner compensation from 2006 to 2018. [16]

Thus, the difference between the "with KOIZ" scenario and the "without KOIZ" scenario, in this regard, is that the "with KOIZ" scenario enjoys 100% of this net income tax revenue, but only after 2018. In contrast, the "without KOIZ" scenario assumes that only the non-induced proportion of partners would be located in the City and State, but the net income tax revenue generated from those partners' compensation is received from 2006 on.[17]

Secondly, we assumed that property tax revenues that would have been generated without the KOIZ would have been $0, since the previous tenant was Amtrak. The "with KOIZ" scenario shows property tax revenues starting in 2018, and uses conservative and level estimates for the building's market value and current property tax rates.[18]

[15] We also assumed, for purposes of calculating income-based taxes, that the salary averages and residency proportions for the tenants of the Cira Centre were equal to those of Center City office worker historical averages. Surveys of a subset of the tenants within the Cira Centre verify that these assumptions are reasonably accurate.

[16] For the firms within the Cira Centre that have partners, in some cases we had access to exact counts and in some cases we had to rely on industry averages. We then used a conservative amount of $300,000 for compensation per partner, and assumed that residency proportions were equal to those of Center City office worker historical averages. Thus, we were able to arrive at an annual partner compensation amount, which, multiplied by the appropriate net income tax rates, gives us a net income tax revenue amount on partner compensation.

[17] Note that we are being very conservative in our methodology, since it is likely that the proportion of partners induced by the KOIZ to locate in the Cira Centre is greater than the proportion of non-partner wage earners. In other words, in a hypothetical "without KOIZ" scenario, one would imagine a much smaller proportion of partners that would consider staying in Philadelphia, and the "without KOIZ" tax revenues generated would be lower.

[18] The building has a current market value of $117 million, according to the Board of Revisions of Taxes (which, divided by 70%, yields a true market value of $167 million, and, multiplied by 32%, yields an assessed value of $37 million, per Philadelphia's current property tax calculations), and our calculations conservatively assume no increase in this assessed value or in the

Based on these assumptions, then, we have constructed a spreadsheet to compare tax revenues that are expected to be generated from the existence of the Cira Centre ("with KOIZ") with those that would likely be generated absent the existence of the Cira Centre ("without KOIZ"). Therefore, our numbers look like this:

Table 4.5 – Fiscal Impact of the Cira Centre on Philadelphia/Pennsylvania Over Time

	Philadelphia		Pennsylvania	
	w/KOIZ	w/o KOIZ	w/KOIZ	w/o KOIZ
2006-2018	100% x wage tax revenue only = $11.9 million per year	(1 – 42.6%) x all tax revenues = $8.8 million per year	100% x personal income tax revenue = 11.0 million per year	(1 – 35.6%) x all tax revenues = $12.6 million per year
2018 - on	100% x all tax revenues (including net income tax on partner distributions and property tax) = $18.5 million per year	(1 – 42.6%) x all tax revenues = $8.8 million per year	100% x all tax revenues = $19.6 million per year	(1 – 35.6%) x all tax revenues = $12.6 million per year

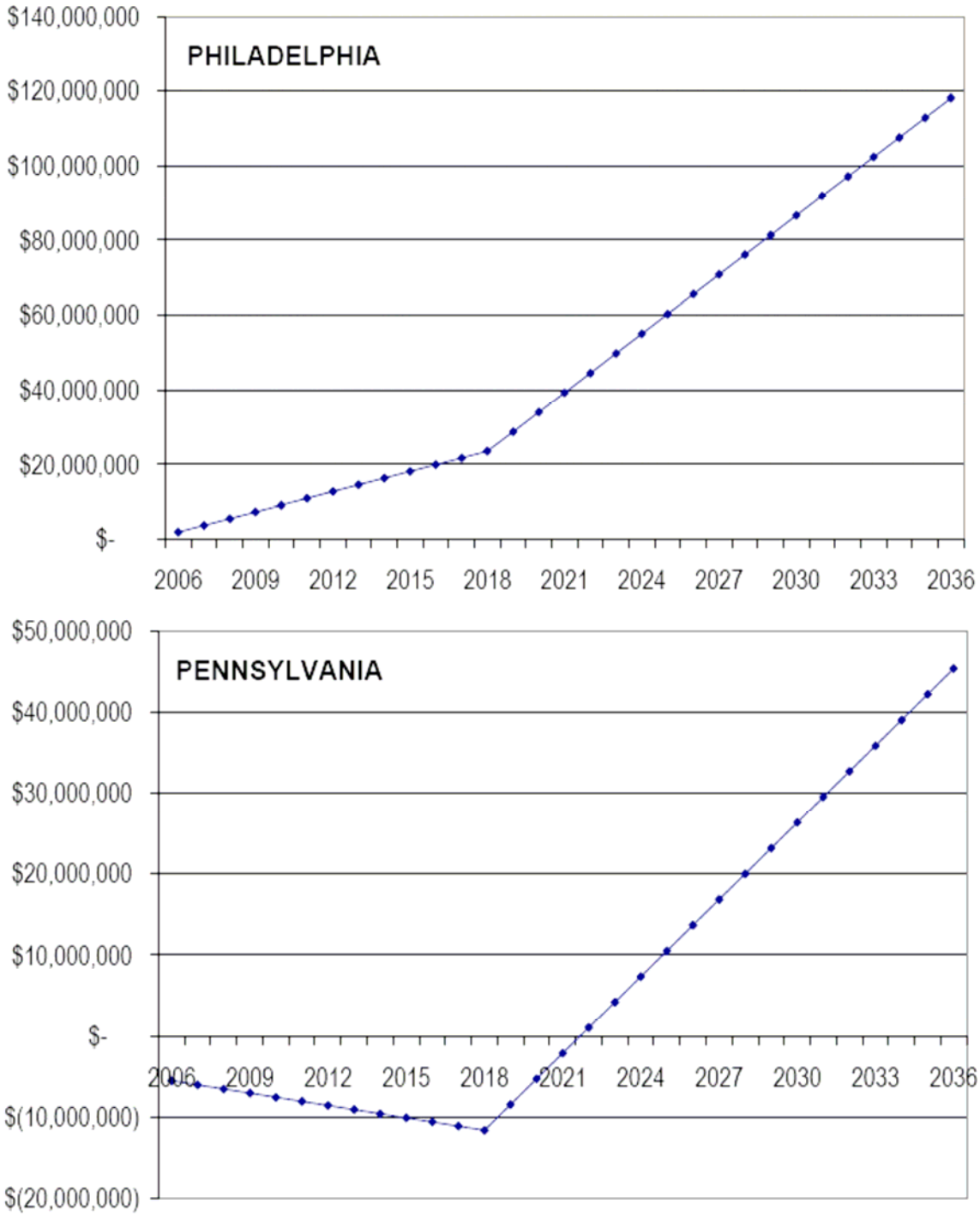
Source: Econsult Corporation

Our analysis shows that these increases have more than compensated for the upfront loss of tax revenues as a result of the various tax incentives offered through the KOIZ. In the case of Philadelphia, annual tax revenues in the "with KOIZ" scenario are always higher than those in the "without KOIZ" scenario, while in the case of Pennsylvania, the cumulative (i.e. running) difference between the "with KOIZ" and "without KOIZ" scenario starts out negative but quickly turns positive after the incentive period ends in 2018 (see Figure 4.8).[19]

millage rate, and therefore in the property tax bill, for the entire analysis period. Of course, to the extent that the building rises in value, the tax revenues will increase.

[19] See also Appendix C, which depicts the "KOIZ" and "no KOIZ" as two separate lines, rather than just showing the difference between the two scenarios.

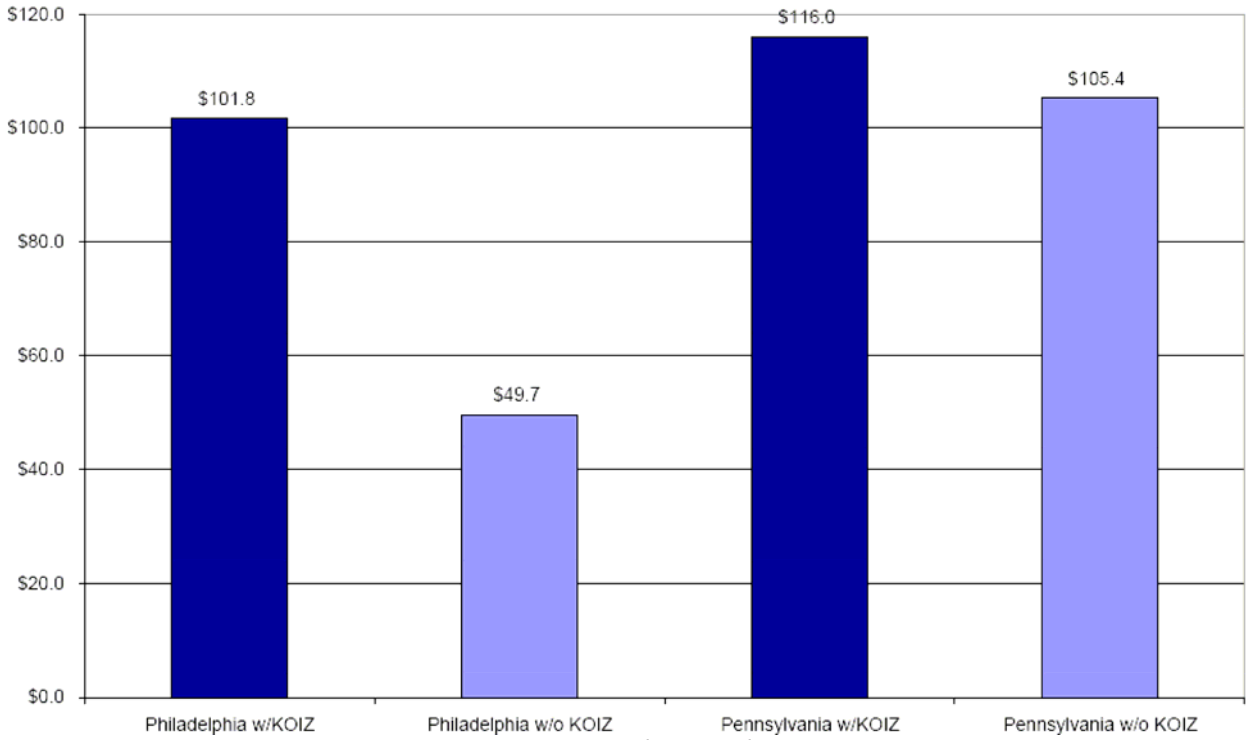
Figure 4.8 – Cumulative Gain (Loss) to Philadelphia/Pennsylvania from KOIZ



Source: Econsult Corporation

All told, the cumulative gain in tax revenues from the one-time construction and annual operations generated by the KOIZ reaches over $100 million for the City and over $20 million for the State by 2026 and over $200 million for the City and almost $100 million for the State by 2036. From 2018 on, the annual difference between the "with KOIZ" scenario and the "without KOIZ" scenario is almost $10 million for the City and almost $7 million for the State. Discounted at 5%, this yields a twenty-year net present value gain of over $60 million to the City and almost $2 million to the State and a thirty-year net present value gain of almost $100 million to the City and almost $25 million to the State.[20]

Figure 4.9 – Cumulative PV of Tax Revenue w/ and w/o KOIZ in $MM (2006-2036)



Source: Econsult Corporation

These fiscal gains can then be used for additional economic development initiatives to further improve the region's attractiveness to businesses. In fact, far from impairing its urgency to reduce taxes and improve services for all businesses, as some critics suggested would happen, the City has accelerated such efforts since the commencement of the Cira Centre project.

[20] Of course, it is conservative to depict the net present value of these annual gains from KOIZ in this way, because it assumes no non-inflation growth in the tax base over time.

4.5 Intangible Benefits

In addition, the project has generated and will generate the following intangible benefits to the City:

- It adds 2188 jobs to Philadelphia, of which 945 are new to the City and 790 new to the State.
- It adds brand new, state-of-the-art space to the City's commercial office inventory, an important consideration, given the general age and condition of the City's current stock.
- Its connection to 30th Street Station and close proximity to many large institutions counteracts sprawl and ignites the many economic and environmental benefits of densely-built, transit-oriented development.
- It is a signature building amidst University City's rise as a destination neighborhood and makes a stunning contribution to the City's overall skyline.
- It facilitates the relocation, retention, and expansion of knowledge workers within City limits, who are an increasingly seen as a vital addition to aesthetic vibrancy and economic activity.
- It strengthens the increasingly important link between University City and Center City, building on the work of many other key institutions in this effort.
- It improves Philadelphia's position in the competition for high-skill jobs along the Northeast Corridor, an advantage of particular importance given the many institutions of higher learning in the City that annually produce high-skilled graduates looking for new jobs and new residences.

5.0 CONCLUSION

Clearly, the Cira Centre project has had a tremendous economic, aesthetic, and intangible effect on Philadelphia. Its upfront construction costs and ongoing operating expenditures contribute directly and indirectly to the local economy. There has been a significant real estate impact from the building itself, by adding modern office space to the City's aging stock as well as increasing nearby property values (and therefore the property tax base). The foregone tax revenues as a result of the various KOIZ incentives are more than made up for by the expansion of the overall tax base from the new tenants and activities within the building. Finally, there are notable intangible benefits that have accrued and will continue to accrue from the project, from the building's stunning skyline presence and its linkage of University City and Center City to its contribution to a more transit-oriented and accessible office setting for the region's knowledge workers. In conclusion, we find that the Cira Centre project has been good public policy in terms of generating additional economic activity, tax revenue, and net benefits for the City.

APPENDIX A: CONSTRUCTION COST BREAKOUT

In determining the multiplier effect of the initial construction phase, we did not include outlays related to land or financing, which accounted for 7.5% of the $250.7 million spent during construction.

Table A-1 – Construction Cost Breakout

	construction	financing	land	prof/sci/tech svcs	supt svcs
Land Ground Rent			$1.7		
Base Building - TCCO	$121.6				
Base Building - BRT	$5.6				
Additional Base Building Items (	$0.3				
Site Engineering				$0.5	
Architectural				$3.2	
Engineering				$2.4	
App. Fees					
Financing		$1.9			
Advertising and Promotion				$1.8	
Legal and KOEZ				$1.4	
G & A					$1.6
BRT Fee and Interest		$15.1			
Contingency	$0.8				
All Tenant Allowances	$56.8				
All Tenant Contributions	$36.0				
TOTAL	$221.1	$17.0	$1.7	$9.2	$1.6

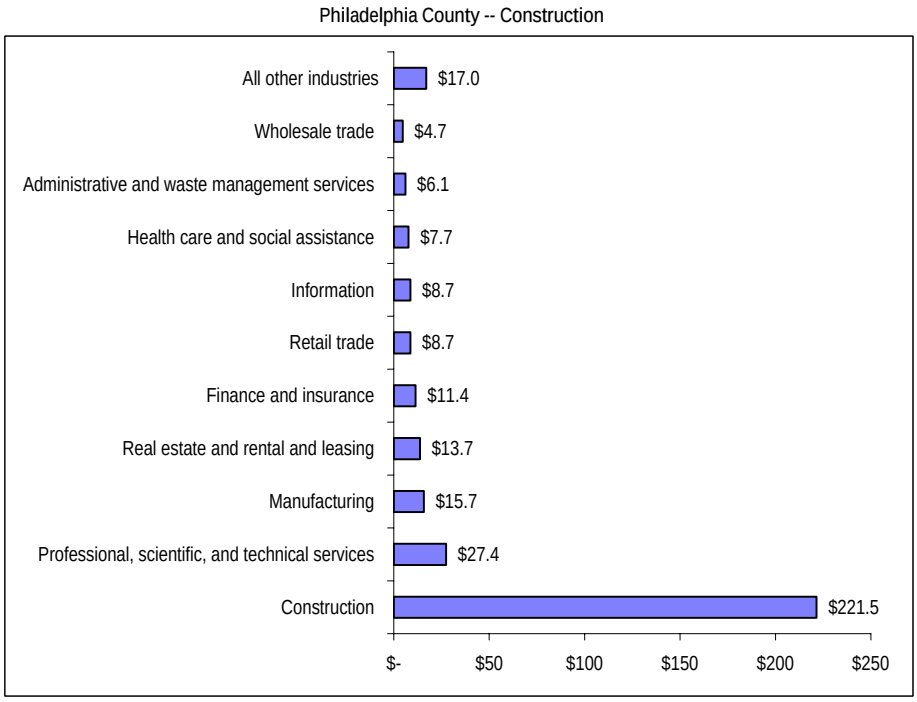
Source: Brandywine Realty Trust

APPENDIX B: ADDITIONAL TABLES AND CHARTS ON INPUT-OUTPUT MODEL

Table B.1 – Project Impacts by Industry

		Philadelphia County			Pennsylvania State		
	industry	top ten	output	% total	top ten	output	% total
TOTAL	Construction	1	$ 222.0	39.5%	1	$ 224.4	25.7%
	Professional, scientific, and technical services	2	$ 173.6	30.9%	2	$ 192.1	22.0%
	Real estate and rental and leasing	3	$ 32.7	5.8%	3	$ 100.4	11.5%
	Manufacturing	4	$ 20.4	3.6%	4	$ 60.8	7.0%
	Finance and insurance	5	$ 19.4	3.4%	5	$ 42.8	4.9%
	Information	6	$ 17.8	3.2%	6	$ 42.3	4.8%
	Health care and social assistance	7	$ 13.0	2.3%	7	$ 42.1	4.8%
	Administrative and waste management services	8	$ 12.4	2.2%	8	$ 27.5	3.2%
	Retail trade	9	$ 11.2	2.0%	9	$ 24.3	2.8%
	Transportation and warehousing	10	$ 8.8	1.6%	10	$ 22.5	2.6%
	All other industries	11-19	$ 30.9	5.5%	11-19	$ 93.8	10.7%
	industry	top ten	output	% total	top ten	output	% total
Construction	Construction	1	$ 221.5	64.7%	1	$ 223.0	39.7%
	Professional, scientific, and technical services	2	$ 27.4	8.0%	2	$ 78.8	14.0%
	Manufacturing	3	$ 15.7	4.6%	3	$ 39.0	6.9%
	Real estate and rental and leasing	4	$ 13.7	4.0%	4	$ 33.3	5.9%
	Finance and insurance	5	$ 11.4	3.3%	5	$ 30.1	5.4%
	Retail trade	6	$ 8.7	2.5%	6	$ 27.0	4.8%
	Information	7	$ 8.7	2.5%	7	$ 26.4	4.7%
	Health care and social assistance	8	$ 7.7	2.3%	8	$ 17.7	3.2%
	Administrative and waste management services	9	$ 6.1	1.8%	9	$ 15.2	2.7%
	Wholesale trade	10	$ 4.7	1.4%	10	$ 14.2	2.5%
	All other industries	11-19	$ 17.0	5.0%	11-19	$ 56.5	10.1%
	industry	top ten	output	% total	top ten	output	% total
Operating	Professional, scientific, and technical services	1	$ 146.3	66.6%	1	$ 153.1	49.1%
	Real estate and rental and leasing	2	$ 19.0	8.7%	2	$ 27.5	8.8%
	Information	3	$ 9.1	4.1%	3	$ 21.6	6.9%
	Finance and insurance	4	$ 8.0	3.6%	4	$ 15.9	5.1%
	Administrative and waste management services	5	$ 6.3	2.9%	5	$ 15.8	5.1%
	Health care and social assistance	6	$ 5.3	2.4%	6	$ 12.3	3.9%
	Manufacturing	7	$ 4.7	2.1%	7	$ 12.0	3.9%
	Transportation and warehousing	8	$ 4.5	2.1%	8	$ 10.4	3.3%
	Accommodation and food services	9	$ 3.9	1.8%	9	$ 7.8	2.5%
	Utilities	10	$ 3.0	1.4%	10	$ 7.1	2.3%
	All other industries	11-19	$ 9.6	4.4%	11-19	$ 28.3	9.1%

Figure B.1– Project Impacts by Industry (Philadelphia)



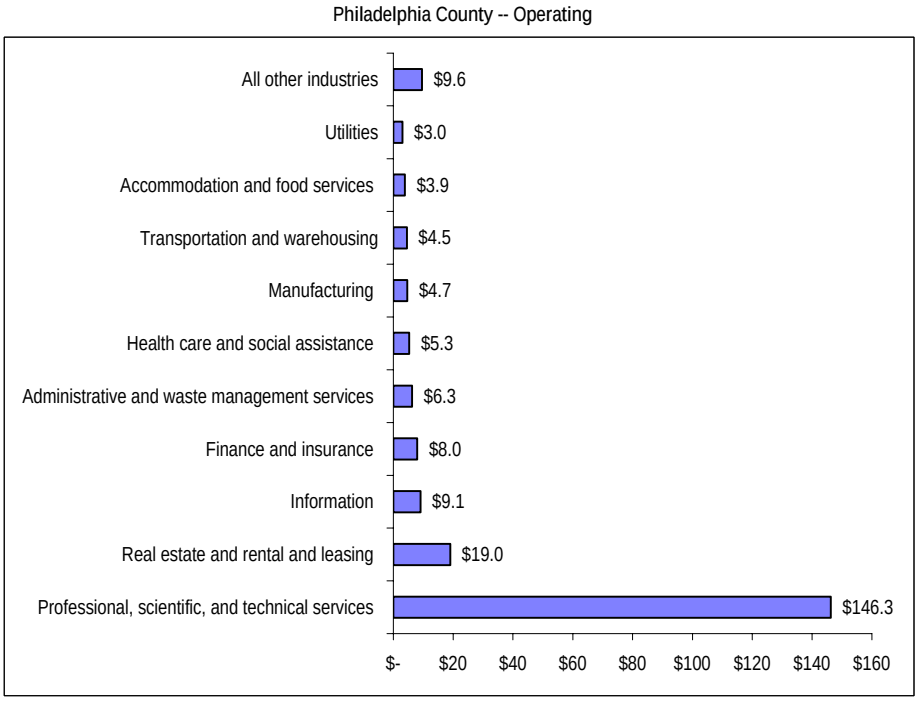
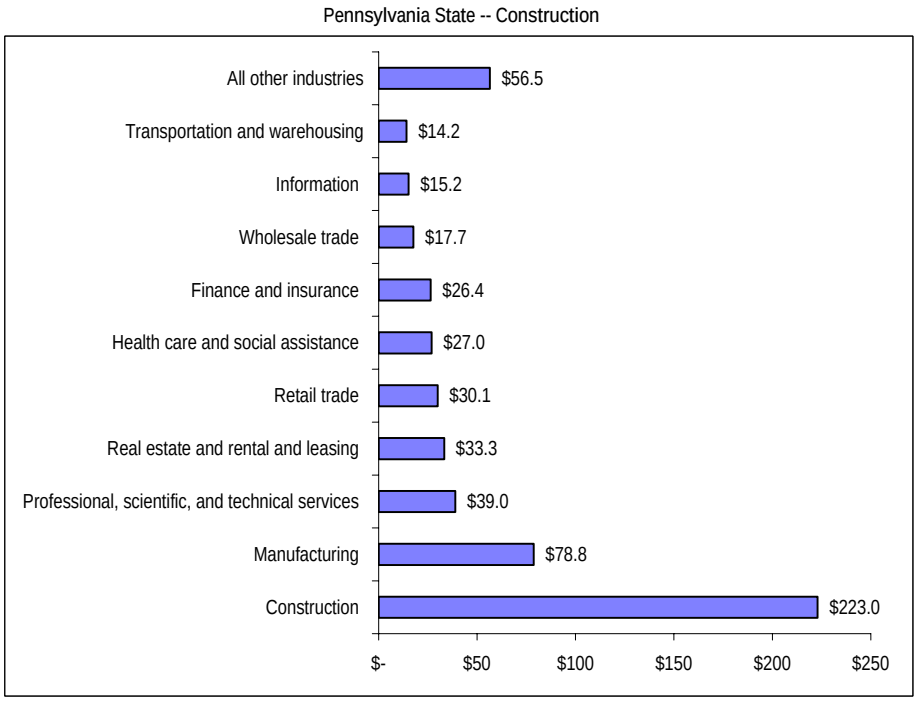
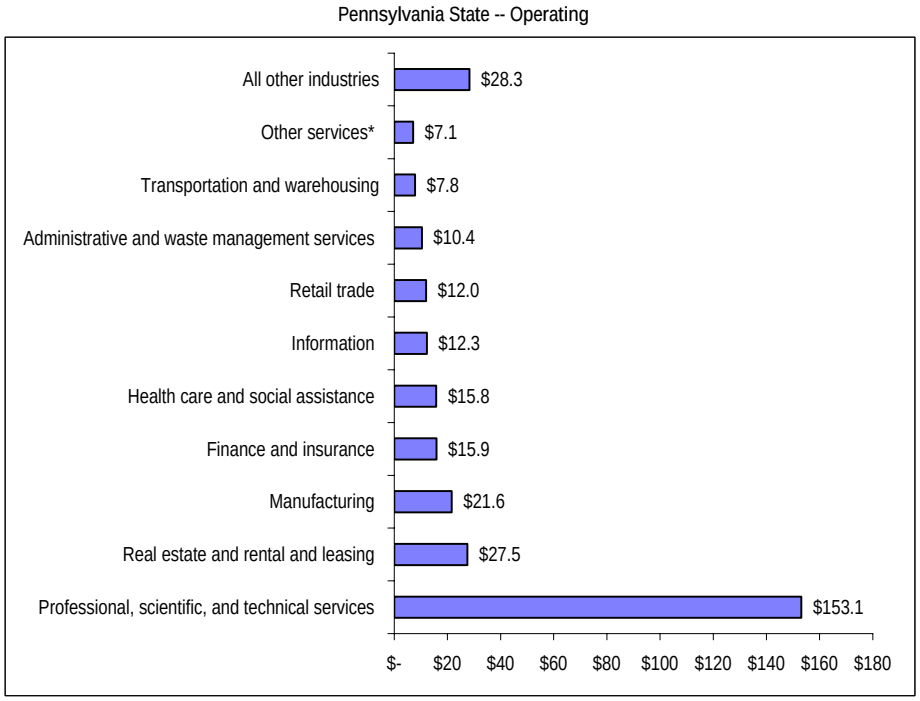


Figure B.2 – Project Impacts by Industry (Pennsylvania)





APPENDIX C: ADDITIONAL TABLES AND CHARTS ON FISCAL IMPACT OF KOIZ

Figure C.1 – Annual Difference Between Philadelphia Tax Revenue with and without KOIZ

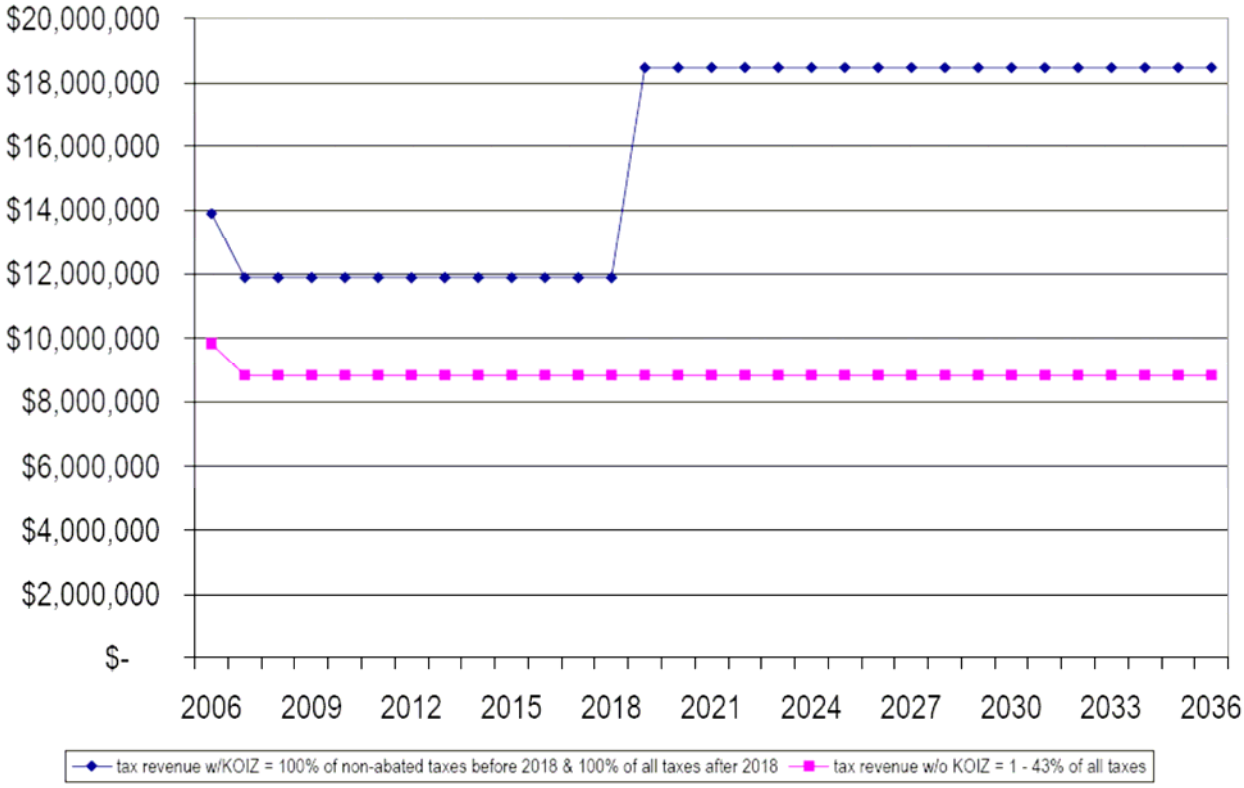
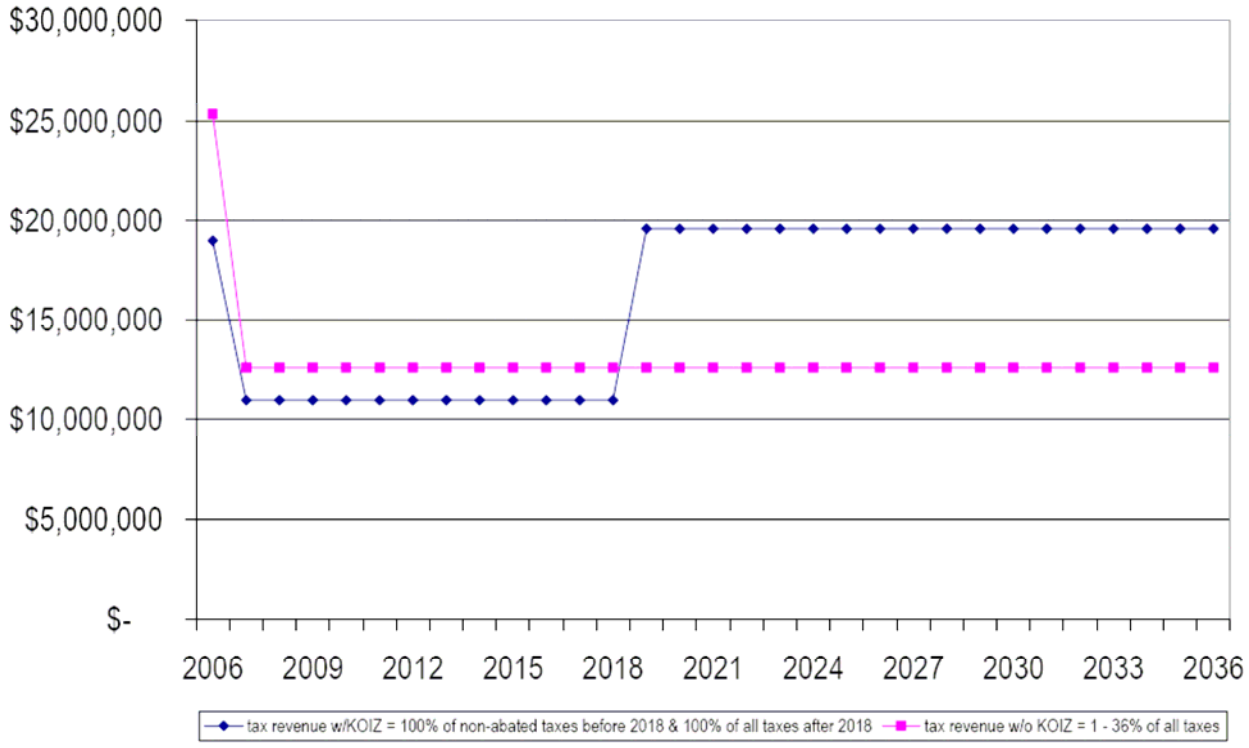


Figure C.2 – Annual Difference Between Pennsylvania Tax Revenue with and without KOIZ



APPENDIX D: ECONOMIC AND FISCAL IMPACT MODEL METHODOLOGY

D.1 Economic Impact Analysis

The economic impact estimates presented in this report were derived from the regional Input-Output (I-O) model developed and maintained by the U. S. Department of Commerce, Bureau of Economic Analysis (BEA). This model, the Regional Input-Output Modeling System (RIMS II), is widely used to estimate the economic impacts of regional projects or programs. The results generated from the RIMS II model are widely recognized as plausible, and defensible, in cases where the input data to the model are accurate and based on reasonable assumptions. This section describes the basic concepts that underlie RIMS II.

An I-O model provides a compact means of summarizing interindustry relationships within regions. The model itself is essentially an accounting framework, expressed as a matrix or array. For each industry in the region, the model shows the distribution of inputs purchased and outputs sold to all other regional industries. The RIMS II model is based on the BEA National I-O model, which shows the input and output structure for nearly 500 industries, and the BEA regional economic accounts, which are used to adjust the information in the national model to reflect a given regions' industrial structure and interindustry trading patterns.

The data that drive the I-O model are the planned expenditures associated with the project or program being studied. In the jargon of I-O models, those expenses make up the "direct expenditures", that form one part of the programs' total economic impact on the region. Assuming that the planned project is a new store, the direct expenditures are the sum of all spending needed to construct , equip and operate that facility.

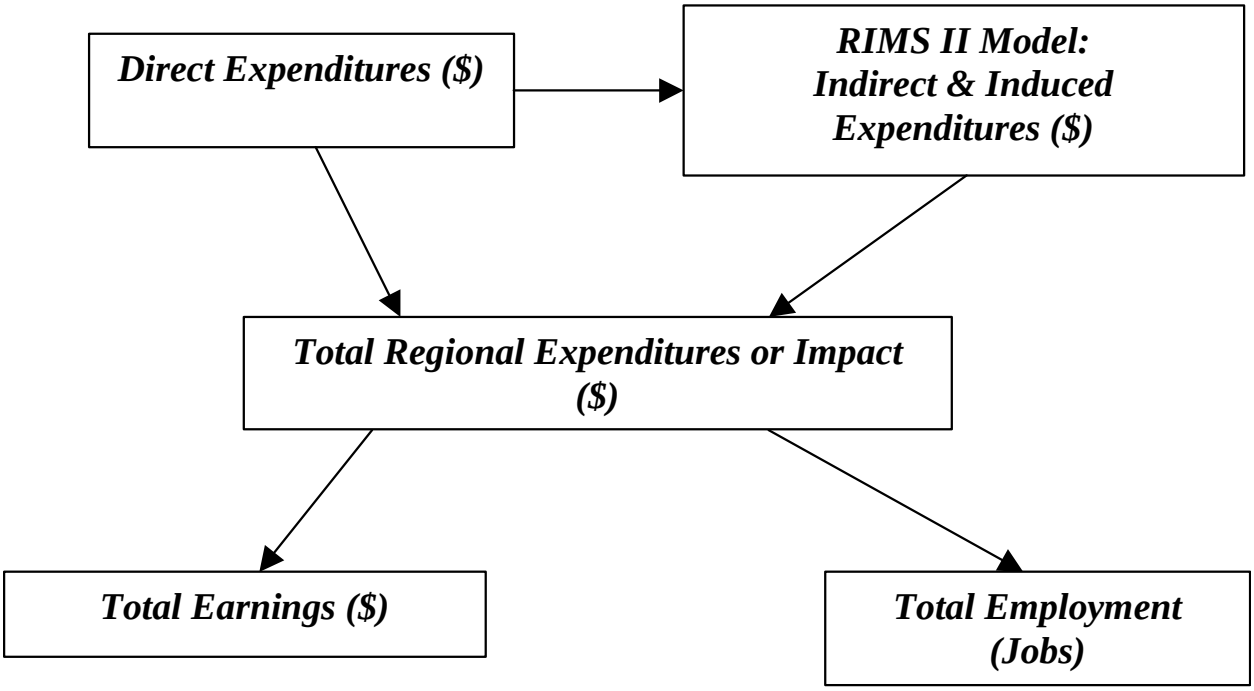
Some of that spending will be to purchase goods and services from other businesses in the region, causing those firms to increase production. In turn, the firms supplying the new store will need to increase purchases from their suppliers, to meet their new orders. The sum of all of this interindustry spending are the "indirect expenditures" associated with the new store.

All of the economic activity resulting from the new store, whether direct or indirect, will require workers who must be paid. Some of their earnings will be spent at businesses within the region on various goods and services, creating another round of economic activity like that described above. These expenditures equal the "induced expenditures" associated with the new store.

The sum of the direct, indirect and induced expenses represent the total economic impact of the new store on the region. In addition to measuring that impact in dollars as output or expenditures, the RIMS II model produces estimates of the proportion of that spending paid to regional households as wages and salaries. Finally, the RIMS II model generates estimates, by industry, of the number of full- and part-time jobs related to the new store. Both the earnings and employment estimates are useful alternative measures of the regional economic impact of the new project.

The following schematic depicts the flow of data, from inputs to outputs, through the model:

Figure D.1 -- Input-Output Model Flow Chart



The overall "success" of the economic impact analysis depends in large part on the initial design of the analysis. For example, if the project involves both construction and operation phases, it is important to separate the total expenditures between the two, and run the RIMS II model for each set of expenditures. The phases occur at different points in time, and have different impacts on the regional economy. Hence, the accuracy of the results depends on recognizing those differences, and treating them appropriately.

D.2 Fiscal Impact Analysis

The RIMS II model provides estimates of the economic impact of a new project or program on the regional economy. It does not, however, estimate the fiscal impact of the increased economic activity on state and local governments. Econsult has constructed a model that takes the output from the RIMS II model and generates detailed estimates of the increases in state and local tax collections that arise from the new project. Those revenues are in fact a part of the total economic impact of a new project that are often ignored in conventional economic impact analyses.

The RIMS II model provides estimates of direct, indirect, and induced expenditures, earnings, and employment within the defined region. The Econsult fiscal model combines the RIMS II output with U. S. Census Bureau County Business Patterns data to produce estimates of the distribution of additional employment and earnings by county. In addition, the 2000 Census "Journey to Work" data on commuting flows are utilized to estimate income earned by residents of each county within the region, regardless of where they work. The fiscal model can then estimate the increase in earned income taxes by county and for the state as a whole resulting from the new project. For complex cases, like Philadelphia, the model can differentiate between residents and nonresidents and apply the proper wage tax rate. Pennsylvania state business and sales taxes, as well as business taxes in Philadelphia, are estimated based on the most recent data on average sales tax base per employee by major industry, as contained in publications from the Pennsylvania Department of Revenue.

The Econsult fiscal model is flexible, and has been extended to estimate New Jersey and Delaware taxes arising from some new project, as well as Pennsylvania state and local taxes. Those extensions are done on a case-by-case basis, depending upon the analysis being performed.